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Remarks

Claims 1-14 are pending, with claims 1, 5, 9, 10, and 11 being in independent form.

As a preliminary matter, the Examiner has not returned form PTO-1449, which was submitted by the Applicant on April 8, 2003, as part of the Fourth Information Disclosure Statement. The Examiner is again respectfully requested to return an Examiner-initialed copy of this form to the undersigned.

Applicants acknowledge with appreciation the indication of allowability of claims 5 and 11.

In the Office Action, claims 1, 4, and 6-8 stand rejected for obviousness over U.S. Patent No. 6,577,613 to Ramanathan in view of U.S. Patent No. 6,122,291 to Robinson et al. ("Robinson"), claims 9 and 10 over Ramanathan and Robinson in view of U.S. Patent No. 5,848,266 to Scheurich, and claims 2 and 3 over Ramanathan and Robinson in view of U.S. Patent No. 5,592,469 to Szabo.

In accordance with the MPEP, three criteria must be met to establish a prima facie case of obviousness. First, the cited documents must teach or suggest all of the claim limitations. Second, there must be some suggestion or motivation, either in the cited documents themselves or in the knowledge generally available to one of ordinary skill in the art, to have combined the teachings of the cited documents. Third, there must have been a reasonable expectation that the documents could have been successfully combined.

The rejections cannot stand at least because no combination of the cited documents teaches all of the claim limitations. Motivations to combine the cited documents and reasonable expectations of successful combinations would also be absent, but it should be sufficient to point out the absent limitations.

Applicant's invention relates to ad hoc communication networks, such as Bluetooth networks, in which terminals or network nodes may belong to several sub-networks or piconets. Claim 1, for example, provides a method of modifying the allocation of a terminal's capacity between two or more networks by receiving, in a first terminal communicating in a first ad-hoc network, a request from a second terminal to modify the first terminal's capacity allocation to communicate in a second ad-hoc network with at least the second terminal, determining whether the first

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terminal has sufficient available capacity to accommodate the request; and if the available capacity is sufficient, then comparing the capacity allocation of the first terminal to the capacity allocation of the second terminal to determine mutually acceptable capacity blocks allocable to satisfy the request.

Applicant's invention addresses the coordination between ad-hoc networks, such as Bluetooth piconets. Ad-hoc networks are typically autonomous and independent. Intercommunication between ad-hoc networks, e.g., between multiple piconets to form scatternets, requires a rather loose coordination to find mutually acceptable communication "time windows," e.g., blocks. According to claim 1, the first terminal acts as a "bridging unit" between two or more ad-hoc networks and determines the time windows when it can communicate in each of the ad-hoc networks without conflicts. This negotiation can be done, for example, when a new ad-hoc network is first attached to the terminal or when traffic conditions on an existing connection between ad-hoc networks changes in order to adapt to increased/decreased traffic flows in either of the ad-hoc networks (or between the ad-hoc networks).

None of the cited documents, alone or in combination, discloses or suggests capacity allocation between two or more ad-hoc networks. In each case, any capacity allocation involves a previously established network, where overall control is maintained by a central node. That is, any resource control, i.e., capacity allocation, is for communication within a single network context and not as between networks, be it within an ad-hoc network domain or a traditional cellular network. Indeed, this difference is significant in the context of the claimed invention.

Ramanathan discloses (see FIG. 1) an ad-hoc network 102 having a server 108 for communication via the internet and with a plurality of terminals 105-107. The action equates the server with the first terminal and any of the terminals with the second terminal.

In contrast to Ramanathan, claim 1 includes a first terminal communicating in a first ad-hoc network and with a second ad-hoc network with at least the second terminal. That is, claim 1 defines at least two ad-hoc networks in communication with the first terminal. Nowhere does Ramanathan disclose or suggest two ad-hoc networks in communication. The server communicates in a single ad-hoc network

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and with the Internet, which is clearly not an ad-hoc network, as can be appreciated by one of ordinary skill in this art.

Moreover, according to claim 1, the request from the second terminal is to modify the first terminal's capacity allocation to communicate in a second ad-hoc network with at least the second terminal. Ramanathan clearly states:

> "Each of the networks 102-104 may implement processing, described below, for reserving access to bandwidth in communication channels within the networks." See col. 5, ll. 1-3.

That is, according to Ramanathan, the server's (first terminal) capacity allocation is to communicate within the same single ad-hoc network. There is no capacity allocation as between ad-hoc networks.

In contrast, in claim 1, the first terminal's capacity allocation is modified to communicate in a second ad-hoc network with at least the second terminal. That is, the allocation is done to allow communication between two (or more) ad-hoc networks, not to allocate resources for communication within the same ad-hoc network. Ramanathan does not address the problem of allocating resources between different ad-hoc networks.

Robinson does not cure these deficiencies. As discussed in our previous response, Robinson says nothing about ad-hoc networks and piconets, and so has nothing to say about issues that are important in such networks. For example, Robinson's column 1 describes TDMA and CDMA cellular telephony systems, and Robinson's description is in terms of base stations and mobile terminals (see, e.g., col. 4, ll. 61-67). Accordingly, Robinson does not describe modifying the allocation of a terminal's capacity between two or more networks as claimed, which is not surprising because terminals in cellular telephone networks cannot belong to multiple networks simultaneously and thus such a feature is not relevant to the network described by Robinson. Robinson also does not address the problem of allocating resources between different ad-hoc networks.

Thus, neither Ramanathan nor Robinson describe modifying the allocation of a terminal's capacity between two (or more) ad-hoc networks as claimed, and

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Ramanathan and Robinson fail to support a _prima facie_ case of obviousness with respect to claim 1 and its dependent claims 4 and 6-8.

Szabo, like Robinson, describes a cellular telephone system (see e.g., col. 4, ll. 4-14), not two (or more) ad-hoc networks, and thus of course cannot remedy the above-described deficiencies. Accordingly, Ramanathan, Robinson, and Szabo fail to support a _prima facie_ case of obviousness with respect to claims 2 and 3, which depend from claim 1.

Scheurich does not relate to even a telecommunication network let alone two (or more) ad-hoc networks, and thus cannot remedy the above-described deficiencies either. Moreover, because Scheurich is so far afield from even Ramanathan and Robinson, it includes no suggestion or motivation that would have led to its having been combined with Ramanathan or Robinson, and there would have been no reasonable expectation that all three patents could have been successfully combined. Accordingly, Ramanathan, Robinson, and Scheurich, and Scheurich fail to support a _prima facie_ case of obviousness with respect to claims 9 and 10.

Accordingly, since in each case, the respective combination of documents fails to disclose or suggest all of the claim limitations for at least the above reasons, the obviousness rejections should be withdrawn.

The third requirement of a _prima facie_ case is also missing. Even if one had attempted to combine the disclosures of the cited documents, one would have been more likely to arrive at something that did not work at all or not in the manner claimed by the present application. As discussed above, one of ordinary skill in the art would have known that the features of Ramanathan and Robinson cannot be combined without further modification to reach the subject matter defined by the claims. Neither document discloses how to perform capacity allocation as between ad-hoc networks. In the absence of any suggestion in the cited documents of how to make such a combination operable, one would have faced a serious engineering problem that naturally would have had a low probability of success without substantial experimentation and effort, especially in view of the need to modify the teachings of the documents. It is well settled that "[t]he mere fact that the prior art may be modified in the manner suggested by the Examiner does not make that

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modification obvious unless the prior art suggested the desirability of the modification." In re Fritch, 23 U.S.P.Q.2d 1780, 1783-84 (Fed. Cir. 1992).

Accordingly, the combination of documents relied upon to support the obviousness rejections is improper and the claim rejections should therefore be reconsidered and withdrawn for this reason also.

For the foregoing reasons, Applicant considers the application to be in condition for allowance and respectfully requests notice thereof at an early date. The Examiner is encouraged to telephone the undersigned at the below-listed number if, in the Examiner's opinion, such a call would aid in the examination of this application.
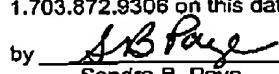
Respectfully submitted,

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Date: January 8, 2004

I hereby certify that this correspondence is being filed by facsimile transmission to the Commissioner for Patents, P.O. Box 1450, Alexandria, VA. 22313-1450, to facsimile number 1.703.872.9306 on this date, January 8, 2004.

by _____
Sandra B. Paye